

one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

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23. (Amended) A computer program product comprising program code means stored on a computer readable medium for performing, when said program product is run on a computer, a method for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising:

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

REMARKS

Claims 1-17, 22, and 23 remain in the application. Claims 18 and 19 are cancelled without prejudice. Claims 20 and 21 were cancelled in a preliminary amendment. Claims 1, 16, 22, and 23 have been amended to further clarify the invention.

In response to the Election/Restriction Requirement in the present Office Action, Applicants elect to prosecute the invention of Group I, as described by claims 1-17, 22, and 23, without traverse. Applicants hereby cancel claims 18 and 19 and reserve the right to prosecute claims 18 and 19 in the future.

A marked-up version of the rewritten claims is attached hereto.

Claims 1-3, 5-11, 16, 17, 22, and 23 were rejected under 35 USC 103(a) as being unpatentable over Crawford et al. (US 4,384,354) in view of Scholz et al. (US 5,325,397).

Claim 1 is directed to an apparatus for determining a pulse position for a signal encoded by pulse modulation and having a first and second component. The apparatus includes a determination unit with a probability table for providing a value of the pulse position in response to receiving at least one symbol of a first component of the signal and one at least one symbol of a second component of the signal, where the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

Applicants respectfully submit that the combination of Crawford et al. and Scholz et al. fails to disclose or suggest Applicant's determination unit.

Crawford et al. discloses measuring noise margins in digital transmission systems by replacing a pulse of a pulse sequence with a variable pulse. The variable pulse is detected and a probability distribution of deviations from a reference are determined. The Examiner correctly points out that Crawford et al. fails to disclose a probability table.

Scholz et al. discloses determining a bit error rate for a digital communication link by comparing an estimated probability density function with known probability density functions.

Neither Crawford et al. nor Scholz et al. disclose a determination unit that provides a value of a pulse position in

response to receiving at least one symbol from a first signal having a first quality measure, and at least one symbol from a second signal having a second quality measure.

Crawford et al. discloses inserting and detecting a variable pulse over a sequence of pulses. Scholz et al. discloses categorizing values of a decision variable over a number of symbols. However, neither reference discloses receiving symbols from different signals with particular quality measures and providing a value of a pulse position in response.

At least for these reasons, Applicants respectfully submit that the combination of Crawford et al. and Scholz et al. fails to render claim 1 unpatentable.

Claims 2, 3, and 5-11 depend directly or indirectly from claim 1 and therefore are also patentable over the combination of Crawford et al. and Scholz et al.

Claims 16, 22, and 23 include features similar to those of claim 1. For the same reasons argued in support of claim 1, Applicants respectfully submit that claims 16, 22, and 23 are also patentable over the combination of Crawford et al. and Scholz et al.

Claim 14 was rejected under 35 USC 103(a) as being unpatentable over the combination of Crawford et al. and Scholz et al., and further in view of Rautiola et al. (US 5,949,775).

Claim 14 depends from claim 1 and further recites that the signal is an infrared signal. For all the reasons stated above, the combination of Crawford et al., Scholz et al., and Rautiola et al. fails to teach or suggest all the limitations of claim 1, in particular, the determination unit as claimed.

Claim 15 was rejected under 35 USC 103(a) as being unpatentable over the combination of Crawford et al. and Scholz et al., and further in view of Makram -Ebeid et al. (US 5,617,459).

Claim 15 depends from claim 1 and further recites that the pulse modulation comprises pulse position modulation. However, the combination of Crawford et al., Scholz et al., and Makram -Ebeid et al. fails to teach or suggest the determination unit of claim 1.

Claim 4 was rejected under 35 USC 103(a) as being unpatentable over the combination of Crawford et al. and Scholz et al., and further in view of Medvedev et al. (SU822200B).

Claim 4 depends from claim 1 and further recites that the probability table is based on Bayes' probability. Like the other combinations of references, the combination of Crawford et al., Scholz et al., and Medvedev et al. fails to teach or suggest the determination unit of claim 1.

Claims 12 and 13 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.


Applicants wish to express their appreciation for the indication of allowable subject matter. However, for the reasons stated above, Applicants respectfully submit that the claims are patentable as they stand.

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable

reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,


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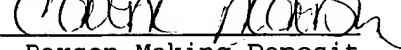
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Marked Up Claim(s)

1. (Amended) Apparatus (101) for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the apparatus comprising:

a determination unit (118) comprising a probability table (110) for providing a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

16. (Amended) A method for determining a pulse position for a signal encoded by a pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising the step of:

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

22. (Amended) A computer program comprising program code means for performing, when said program is run on a computer, a

method for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising ~~the step of:~~

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.

23. (Amended) A computer program product comprising program code means stored on a computer readable medium for performing, when said program product is run on a computer, a method for determining a pulse position for a signal encoded by pulse modulation, the signal comprising a first component (PCS) and a second component (DCS), the method comprising ~~the step of:~~

providing, via a probability table (110), a value (DDS) representative of the pulse position in response to receipt of at least one symbol of the first component (PCS) and at least one symbol of the second component (DCS), wherein the first component is a first received signal having a first signal quality measure and the second component is a second received signal having a second signal quality measure.